



Testing Revegetation Methods in Experimental Restorations of Coastal Plain Depressional Wetlands

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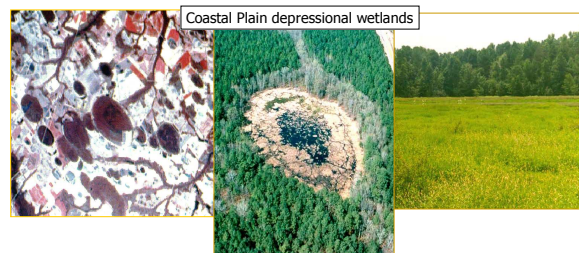
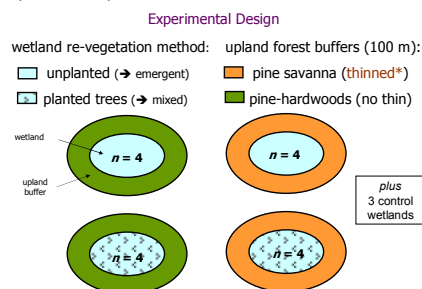
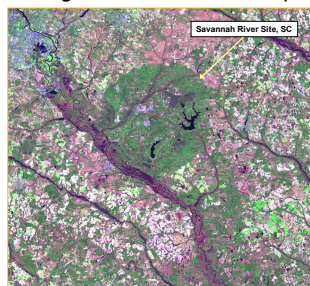
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INTRODUCTION. Across the Atlantic Coastal Plain, isolated depressional wetlands enhance vegetation diversity and provide habitat functions in the landscape. Historical disturbance greatly reduced wetland abundance, and changes in federal regulation further threaten wetland persistence. There is need for technical information to assist depressional wetland conservation and restoration efforts.

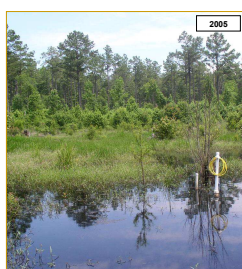
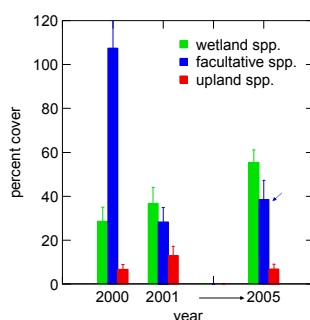
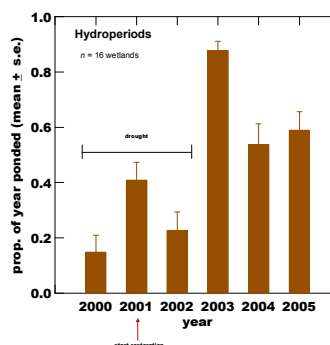
At the Savannah River Site, SC, the multi-investigator "**Carolina Bays Restoration Project**" tested approaches for restoring small depressional wetlands and managing adjacent upland forest buffers. In 16 forested depressions that had been drained and disturbed historically, surface drainage ditches were plugged to re-establish natural ponding, and successional forest was harvested to open the sites for revegetation. Our studies evaluated the effectiveness of "passive" revegetation (natural recruitment from seed banks or dispersal) and tested planting success for selected wetland species (baldcypress, swamp tupelo, wetland grasses). Other investigators have studied responses of various fauna to the restored habitats.



SELECTED FINDINGS

Early and unpredictable drought slowed hydrologic recovery

- Wetlands ponded little water prior to restoration (2000)
- After harvest, ponding duration increased temporarily in early 2001, but drought caused wetland drying that persisted until the 3rd year
- Characteristic hydroperiods were re-established by the 4th - 5th year; these differed according to depression geomorphic properties



Passive revegetation (mostly) achieved dominance by wetland species

- Complete harvest removed pre-restoration (2000) cover of facultative woody species and stimulated emergence from seed banks containing >60% wetland species
- Wetland species cover increased progressively from year 1 (2001) and was favored by wetter ponding conditions.
- By 2005, restored hydrology suppressed upland species cover; however, drought promoted woody resprouting and increasing facultative cover in some sites.

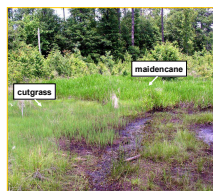
Success of tree plantings was mixed

Baldcypress (larger) survived well; swamp tupelo (smaller, drought-sensitive) survived poorly.

Census date	Cypress		Tupelo	
	% surviving	Height (cm)	% surviving	Height (cm)
May 2001	100	100	103 (1)	56 (1)
Sept 2001	91 (3)	80 (3)	106 (1)	55 (1)
May 2002	88 (4)	63 (5)	-	-
May 2003	82 (5)	26 (8)	131 (2)	63 (2)
May 2004	81 (5)	25 (8)	152 (2)	94 (3)
May 2005	79 (5)	23 (8)	196 (3)	124 (4)



Baldcypress (5th yr)



Transplanted grasses established well

Cover of cutgrass and maidencane averaged 40% and 60%, respectively, by the 5th year

Summary & (Some) Lessons Learned

- Seed banks supplied adequate wetland species for passive restoration, in part because of site history
- Selective planting can supplement passive restoration, as seed banks did not fully reflect the plant composition of natural reference wetlands
- Early hydrologic recovery is critical; droughts are an inherent challenge to restoring rainfall-dependent depressional wetlands
- Basin properties limit potential hydroperiod and thus the potential to maintain emergent (versus forested) vegetation
- Faunal groups responded positively to the restoration of wetland habitat

The Carolina Bay Restoration Project received a 2006 Regional Forester's Natural Resources Stewardship Award for its innovation, scope, long-term duration, and significance

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